

A horizontal banner with a dark red background. On the left, there is a photograph of a woman with long brown hair, wearing a floral dress, standing in front of a brick house. To the right of the photo, the text 'What software can do' is written in large, white, sans-serif font.

What software can do


Integrated Demand Side Management

Using a 2-way communicating thermostat

Centrally located software and algorithms

Create individualized IDSM solution/home

The EcoFactor service

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- A photograph of a woman with long brown hair, wearing a floral dress, standing in front of a brick house with a white door and a small porch. The photo is framed within a dark red banner that also contains the title 'The EcoFactor service'.
- Leverages PIER-sponsored research
 - Reduces HVAC cycling by up to 40%
 - Lets consumers choose automated optimization
 - Gives consumers greater control
 - Delivers EE and DR advantages

How it works

- Any two-way communicating thermostat
- Data sent from thermostat to central server
- Recommendations sent back from server
- Consumers can have recommendations applied manually or automatically
- Consumers can always easily override

A photograph of a family of four (two adults and two children) standing in front of a house with a black metal fence. The photo is set against a green background with white diagonal lines.

The science behind the scenes

- Servers log data, determine “dynamic signature” of each home
- Dynamic signature plus other data allows day-ahead prediction of HVAC cycling, temperatures and energy consumption

A photograph of a family of four (two adults and two children) standing in front of a house with a black metal fence. The photo is set against a green background with white diagonal lines.

Consumer Benefits

Software can tell consumers **WHY** their bills are high

- Energy bill = structure + HVAC system + behavior
- We can identify which is at fault, and grade the relative performance of each

A photograph of a family of four (two adults and two children) standing in front of a house with a black metal fence. The photo is set against a green background with white diagonal lines.

Grid-level benefits

- Hourly day-ahead AC load forecasting
- Improved residential DR penetration
- More DR/air conditioned home
- Real-time DR verification
- Multiple DR types (Reliability, Economic, Spinning Reserve)

Real and Pilot-ready

- Successful field trials in summer (Adelaide) and winter (Minneapolis)
- Savings, load shifting, forecasting all verified



Thank you

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